

ROLE OF CITIES IN THE ECONOMY OF CENTRAL EUROPE: SOME MEASUREMENT METHODOLOGIES

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Abstract: Recently, one of the characteristic orientations in social science studies focusing on cities has been the ranking of cities, as well as the definition of the world's leading cities (world cities, global cities) on the basis of various criteria. Central European countries are given just a minor role in these researches, particularly in comparison with German cities with their considerable economic performance. This analysis compares the large cities of Austria, Germany and the countries of the Visegrád Group in terms of their role in economic leadership. To this end, the characteristic parameters have been examined: the GDP in purchasing power standards and nominal GDP of the cities, the revenues of multinational corporations or large companies found in these cities, as well as the domestic market capitalization of the stock exchanges.

Keywords: Central Europe, Visegrád Group, GaWC, world cities, economic control, multinational corporations, stock exchange

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INTRODUCTION

One of the mainstream directions of social studies focusing on cities is the ranking and categorization of cities in view of varied criteria. According to Beaverstock et al. (1999), these ranks are based on two different approaches: the functional approach examines the cities as non-independent units, but parts of a comprehensive social-economic system, whereas the demographic approach considers the size of the cities to be a determining factor. The associated literature (Beacerstock et al., 1999; Sassen, 1991; Taylor, 2004) tends to call cities ranked on the basis of the functional approach *world cities* or *global cities*, while cities ranked with reliance on the demographic approach are described as *megacities*. There is a sharp contrast between the two types. To explain it with the use of an example: Karachi (Pakistan) with its population over 13 million is obviously a megacity, but not a world city, whereas Frankfurt (Germany), where the number of inhabitants is under 700 thousand, is one of the dominant financial centers of the world, and therefore is considered to be a world city, but not a megacity. Only four or five of the European cities can be regarded as megacities, first and foremost Paris, London, Moscow and Istanbul with their individual population of approx. 10 million. On the other hand, the definition of megacities is not applicable to the cities of the Central European countries – nor to German cities –, yet some of the cities in the region belongs to various groups of world cities. Quite obviously, the associated literature defines world cities on the basis of highly differing characteristics, and thus the categorization of cities changes almost from author to author. For the purpose of our analysis, it is important to clarify the terms world city and global city, as well as the scope of application of these definitions.

Nevertheless, most authors mention Central European cities just marginally. According to Friedmann (1995), Sassen (2006) and Taylor (2004) the capitals of the Visegrád Group are in fact the most significant headquarter cities of Western (e.g. German or Austrian) companies involved in business operations in Eastern Europe, they are the so-called gateway cities. Some of the works conclude that the large cities of the region – especially Budapest, Prague and Warsaw – do not have sufficient economic weight, and therefore their role in economic leadership is rather insignificant.

This study compares some of the characteristic economic parameters of large cities in Central European countries (Austria, Czech Republic, Germany, Hungary, Poland and Slovakia). We try to answer the question which the dominant cities of regional economic leadership are, and in the given economic system what role is taken by the cities of the Visegrád Group.

POSITION OF CENTRAL EUROPEAN CITIES AMONG WORLD CITIES

The definition of the world city was coined by Patrick Geddes (1915) at the beginning of the last century, and then the definition was further explained in the work of Hall (1966), Hymer (1972) and Heenan (1977). In parallel with the economic growth of the developed world, the second half of the twentieth century witnessed a booming increase in the number of multinational companies, while their role in economic leadership came to encompass the whole world. In this period, city-related studies defined world cities basically on the ground of the number of multinational corporation (MNC) headquarters present. The work of Hall (1966) and Hymer (1972), however, also suggest that MNCs representing economic leadership act in close cooperation with the centers of governmental decision-making. The underlying interrelations – especially in Europe – resulted in the dynamic growth of capitals e.g. London, Paris, Moscow. The only notable exception was Germany, where instead of Berlin, divided by fissures of political ideology, a traditionally industrial area the Rhine-Ruhr region took economic leadership. Among other reasons, for the lack of MNCs large cities of the Central European countries – certainly, with the exception of Germany and Austria – were still not included in these works. According to Hall (1966), the only large city of the former socialist countries to be deemed as a world city was Moscow, but in contrast with the large cities of the West not for its economic functions, but political weight.

After the change of the political regime, economic systems of the Eastern and Central European countries witnessed substantial changes. The conversion to market economy and privatization resulted in economic environments that made the large cities of the region appraisable not only in Europe, but on the global scale, as well. One of today's key pieces of literature, Saskia Sassen's (1991) *The Global City* categorizes large cities with respect to the concentration and intensity of advanced producer services. Global economy – with respect primarily to the characteristics of producer services – is topped by cities like New York, London and Tokyo, as well as Paris and Frankfurt. According to Sassen (1991), in the early 1990s economy in the countries of the Eastern and Central European region saw a tide of foreign working capital investments that were primarily implemented in capitals featuring more developed infrastructure, such as Budapest, Prague and Warsaw. Ivanička Sr. and Ivanička Jr. (2007) state that the most important bases for Western companies wishing to expand their operations in the region were Prague, Warsaw and Budapest, and as a consequence the cities became the centers of regional economic leadership. The Globalization and World Cities Research Network's (GaWC) study published in 1999 clearly reflects the increasing economic significance of the large cities of Eastern and Central Europe (Beaverstock et al., 1999). In the light of the categorization made in view of four distinct factors (accountancy service, advertising service, banking service, legal service), beside

German cities – though to a varied extent – Bratislava, Budapest, Prague, Vienna and Warsaw have a dominant role in the Central European region (Table 1).

Table 1 Rank of Central European cities by different services according to the GaWC

| Category | Global accountancy service centres | Global advertising service centres | Global banking service centres | Global legal service centres |
|----------|---------------------------------------------|---------------------------------------|--------------------------------------|---------------------------------------------|
| Prime | Düsseldorf, Frankfurt | - | Frankfurt | - |
| Major | Berlin, Cologne, Hamburg, Munich, Stuttgart | Düsseldorf, Frankfurt, Prague, Vienna | Prague, Warsaw | Berlin, Budapest, Frankfurt, Prague, Warsaw |
| Minor | Dresden | Budapest, Hamburg, Warsaw | Bratislava, Budapest, Munich, Vienna | Bratislava, Düsseldorf, Hamburg, Munich, |

Source: Beaverstock et al., 1999

On the basis of the above-mentioned factors, GaWC examined and ranked 122 cities on a scale of 12 levels (GaWC inventory). Table 2 shows the result of the GaWC inventory, wherein most of the Central European cities are deemed to be gamma world cities, while Prague, Warsaw and Budapest are undoubtedly the dominant large cities of the region.

Table 2 The GaWC inventory of Central European world cities

| Alpha world cities | Beta world cities | Gamma world cities |
|-----------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------|
| 10: Frankfurt | - | 6: Düsseldorf, Prague 5: Warsaw 4: Berlin, Budapest, Hamburg, Munich |
| Evidence of world city formation: Vienna, Bratislava, Cologne, Stuttgart, Dresden | | |

Source: Beaverstock et al., 1999

The GaWC analysis is considered to be important and of key significance, because it ranks Central European cities on the basis of objective criteria.

The analyses discussed so far rank the large cities of the region primarily on the global level, but at the same time – with the exception of GaWC – they are less concerned with the relative comparison of the cities. The next section will determine the ranking of large cities in the Central European region primarily with respect to their economic strength and on the basis of quantifiable parameters.

ECONOMIC ROLE OF THE LARGE CITIES IN CENTRAL EUROPE

Large cities are often ranked on the basis of fairly subjective criteria, primarily because these cities have few comparable data (Taylor et al., 2002). A generally measured characteristic is the population of the cities that ranks the settlements on the basis of the demographic

approach, yet is not suitable for comparing economic characteristics. Turok and Mykhnenko (2007) think that changes in the population should be treated as a much more important parameter than population itself, as they are material consequences and at the same time influencing factors of urban economic conditions. Their analysis examined changes in the population of 310 European cities during the period from 1960 to 2005, and defined 9 trajectories. In our opinion, most of the cities in Central Europe have medium-term decline trajectories, indicating considerable fallback after the growth of the 1970s and 1980s. All these traits obviously reflect the negative impacts of the social-economic changes having taken place since the early 1990s. Budapest is in a special situation, as it belongs to the long-term decline category, a group of Western European cities (e.g. Lens, Le Havre, Saarbrücken, Magdeburg, Rhine-Ruhr) dominantly with declining industry. On the other hand, Mulligan and Crampton (2005) explain that today the intensive growth of the urban population primarily affects developing countries, while in Central Europe population tendencies are consistently decreasing. For the following reason, we do not consider the population of cities and its changes to be a determinant aspect of this analysis:

- The population of large cities in the Central European region (mostly capitals) ranges from 500 thousand to 2 million, but there are no prominent differences among the cities. The most populous city of the region is Berlin with 3.7 million inhabitants, and thus it is the only one to belong to the 100 most populous cities of the world (UN 2008). On the international scale, the large cities of the region do not have determining population.
- Fundamentally, the cities of the Central European region have similar demographic attitudes, i.e. their population is mostly dropping (Turok and Mykhnenko, 2007).
- World cities are principally distinguished by their leading roles in the system of global economy, and not their size (Sassen, 1995).

Thus, it is important to examine the economic role of the cities on the basis of such direct parameters that – in contrast with the population – unambiguously indicate their role in global (or regional) economy. Of course, it is extremely difficult to find consistent and standard parameters, and therefore various authors tend to determine the economic power of cities in view of different data.

- Sassen (2006) suggests that today transnational companies (TNCs) act as the organizers of global economy, and on the basis of the revenues or market capitalization of TNCs the headquarter cities can be ranked.
- According to Musil (2009), a very characteristic indicator of global capital control is foreign direct investment (FDI), and with respect to its volume another hierarchic system can be created.
- Smith and Timberlake (2002) set up their ranking on the basis of the number of air passengers in between cities of global significance in order to clearly reflect – in their approach – the role of the individual cities taken in the economic system.
- Taylor (2004) studied the global network connectivity of 315 cities and formulated a rank on the basis of the value of services provided by ten companies that are involved in accountancy, advertising and banking/finance operations.

In our opinion, the relative ranking of cities in Central Europe can be examined with the use of the sources listed above, as well as the data provided by international organizations.

Ranking of cities in view of GDP in purchasing power standards and nominal GDP

The simplest way to express economic performance is the use of the gross domestic product (GDP), which gives grounds to relatively accurate comparisons between national economies, when only estimates are available for cities. An analysis prepared by PricewaterhouseCoopers

(PwhC) in 2009 specifies figures for the GDP in purchasing power standards in the case of the world's 151 large cities. The 2008 data are estimates, while the figures for 2025 represent forecasts based on UN's population estimates. Table 3 shows that the city in Central Europe featuring the largest aggregate GDP PPS (Gross Domestic Product in Purchasing Power Standard) value is not a German city, but Austria's capital, Vienna. Ranking second with its population of 3.4 million, Berlin's GDP PPS value is only two-thirds of Vienna, whose population is half of its German counterpart.

Table 3 Estimated GDP PPS values for the cities in the Central European region in 2008 and 2025

| 2008 rank | Cities ranked by estimated 2008 GDP at PPSs | Estimated GDP in 2008 (billion USD at PPSs) | 2025 rank | Cities ranked by estimated 2025 GDP at PPSs | Estimated GDP in 2025 (billion USD at 2008 PPSs) |
|-----------|---------------------------------------------|---------------------------------------------|-----------|---------------------------------------------|--------------------------------------------------|
| 50 | Vienna | 122 | 67 | Vienna | 175 |
| 69 | Berlin | 95 | 86 | Berlin | 117 |
| 79 | Hamburg | 74 | 94 | Warsaw | 107 |
| 85 | Warsaw | 68 | 108 | Hamburg | 93 |
| 89 | Munich | 64 | 115 | Munich | 81 |
| 100 | Budapest | 53 | 116 | Budapest | 80 |
| 106 | Prague | 49 | 121 | Prague | 75 |
| 144 | Krakow | 13 | 150 | Krakow | 21 |

Source: PricewaterhouseCoopers, 2009

According to PwhC, the city with the largest economic performance within the Visegrád Group is Warsaw, which is ahead of Munich with respect to its value of GDP PPS. Although back in 2008 Warsaw still ranked fourth behind Hamburg, Table 3 shows that by 2025 it will have become the third most significant economic actor of the Central European region. In the light of the long-term forecasts, however, it can be seen that in spite of the absolute GDP PPS growth by 2025 all the cities of the region will have lost their positions held in 2008.

We have examined PwhC's analysis with another study that also pertains to GDP values in purchasing power standards. The ranking has been established on the basis of the per capital nominal GDP values from the Urban Audit database with respect to the population of the cities concerned in 2010, as well as the changes in the GDP values of the national economies as published by Eurostat. Table 4 shows that the city in the region with the largest nominal GDP value is Berlin, followed by two other German cities, Hamburg and Munich. In this hierarchy, Vienna ranks only fourth. The capitals of the countries of the Visegrád Group – with the exception of Bratislava – have similar nominal GDP values, while their ranking is identical to the order published by PwhC.

The decentralization of national economies is clearly reflected in the ratios calculated between the cities featuring the largest and second largest GDP values. In Germany, Berlin's GDP is in fact identical to the GDP value of the second-ranking Hamburg (though the population of Berlin is fairly different from the population of Hamburg), and just 1.14 times larger than the value of the third city of the rank, Munich. In contrast, Warsaw's GDP is 4.1 times larger than the corresponding value of the second-ranking Krakow, Prague's GDP is 4.7 times larger than that of the second-ranking Brno, while Budapest's GDP is 22.6 times larger than the GDP value of Debrecen, which is not included in the list, but ranks second in Hungary. With the exception of Germany, the Central European countries can be basically

described by the economic dominance of their capitals, or at least it is reflected in the GDP data.

In the light of the GDP figures, a lot of conclusions can be drawn, but on the other hand the various estimates (breakdown of the national GDP to the level of the cities, changes in population) involve an excessively large number of factors of uncertainty. The analysis reveals that the figures for the nominal GDP and the GDP in purchasing power standards position the cities differently, while long-term estimates can be potentially modified by the economic crisis significantly – as it has actually happened.

Table 4 Estimated nominal GDP values for the cities in the Central European region in 2010

| 2010 rank | Cities ranked by estimated nominal GDP | Estimated GDP in 2010 (billion Euros) | 2010 rank | Cities ranked by estimated nominal GDP | Estimated GDP in 2010 (billion Euros) |
|-----------|----------------------------------------|---------------------------------------|-----------|----------------------------------------|---------------------------------------|
| 1 | Berlin | 86.41 | 14 | Bremen | 22.07 |
| 2 | Hamburg | 86.16 | 15 | Essen | 20.45 |
| 3 | Munich | 75.37 | 29 | Bratislava | 8.27 |
| 4 | Vienna | 69.62 | 30 | Krakow | 8.17 |
| 5 | Frankfurt | 51.44 | 31 | Poznan | 8.07 |
| 6 | Cologne | 43.22 | 35 | Lodz | 6.33 |
| 7 | Düsseldorf | 39.93 | 37 | Wroclaw | 6.27 |
| 8 | Stuttgart | 35.97 | 42 | Brno | 5.40 |
| 9 | Warsaw | 33.45 | 43 | Gdansk | 4.60 |
| 10 | Budapest | 29.35 | 46 | Ostrava | 3.66 |
| 11 | Prague | 25.56 | 48 | Szczecin | 2.80 |
| 12 | Hanover | 22.95 | 49 | Katowice | 2.67 |
| 13 | Nuremberg | 22.60 | 50 | Plzen | 2.32 |

Source: Urban Audit, Eurostat, national statistical offices

Ranking of cities on the basis of the large companies headquarters

Apart from the estimated GDP figures, the economic potentials of cities can also be determined in view of various details of the MNCs concentrating in the cities. According to Sassen (1991, 2006), it is not only the number of the headquarters that can be used for this purpose, but the revenues of the companies and their market capitalization, as well.

The following analysis determines which city hosts headquarters of the most significant companies in a given country, and what the associated revenues are with the use of the Forbes "The Global 2000" database for 2010. The ranking in Figure 5 is a part of a broader analysis consisting of 544 cities. The hierarchy for 2010 shows the rank of the given city in Central Europe in this list of 544 cities. The headquarters of the companies found in the Forbes ranking have been determined by the use of Hoovers Inc's database, and finally the revenues belonging to these companies have been aggregated. Material differences can be seen when the order established in view of the GDP figures is compared with the ranking based on the revenues of the large companies. The results emphasize the dominance of the German cities. As evidenced by Table 5, the world's 12th largest headquarter city is Munich (revenue of 434.95 billion USD), the aggregate turnover of 10 companies settled here is more than twice as much as the combined revenues of 21 companies from Austria, the Czech Republic, Hungary and Poland. Budapest, the city with the largest aggregate turnover (25.47 billion USD) in the Visegrád Group, ranks only 135th in the international hierarchy. It is to be

noted, however, that while both Hungary and the Czech Republic have given a single city to the ranking, Poland is represented by four cities: Plock, Gdansk, Warsaw and Lublin.

Table 5 Ranking of headquarter cities on the basis of the revenues of TNCs in 2010

| 2010 rank | Cities ranked by aggregate revenue of companies | Aggregate revenue in 2010 (billion USD) | Number of HQs | 2010 rank | Cities ranked by aggregate revenue of companies | Aggregate revenue in 2010 (billion USD) | Number of HQs |
|-----------|-------------------------------------------------|-----------------------------------------|---------------|--------------------------------|-------------------------------------------------|-----------------------------------------|---------------|
| Germany | | | | Central Europe without Germany | | | |
| 12 | Munich | 434.95 | 10 | 64 | Vienna | 112.07 | 9 |
| 20 | Düsseldorf | 298.72 | 6 | 135 | Budapest | 25.47 | 2 |
| 28 | Stuttgart | 231.84 | 4 | 140 | Plock | 23.70 | 1 |
| 44 | Bonn | 169.47 | 3 | 180 | Linz | 16.46 | 2 |
| 51 | Frankfurt | 138.59 | 6 | 212 | Gdansk | 11.92 | 2 |
| 70 | Essen | 93.18 | 2 | 227 | Warsaw | 10.70 | 2 |
| 82 | Ludwigshafen | 72.63 | 1 | 238 | Prague | 9.44 | 1 |
| 90 | Hanover | 64.23 | 3 | 317 | Maria Enzersdorf | 3.99 | 1 |
| 104 | Leverkusen | 52.62 | 2 | 320 | Lublin | 3.92 | 1 |
| 147 | Karlsruhe | 22.30 | 1 | | | | |

Source: Forbes The Global 2000

Obviously, the analysis presented here based on the revenues of the largest companies is only one of the possible approaches. In contrast with the GDP estimates reflecting relatively isolated conditions, however, the revenues of the largest companies are indicative of the role of the cities in economic leadership. To demonstrate it with an example: according to PwC, Metro Manila with its population of nearly 14 million features a USD 149 billion GDP PPS value (PwC), which is larger than that of any city in Central Europe, while the combined revenue of its three TNCs ranked in Forbes "The Global 2000" database can be matched only with the turnover of CEZ (Czech Power Company) in Prague.

Ranking of cities on the basis of the performance of their stock exchanges

Sassen (2006) calls the attention to the fact that a dominant characteristic of the world's leading cities is the considerable capital concentration, which is not solely represented by banks, but also by stock exchanges. Table 6 presents two distinctive parameters of stock exchanges in the Central European region: the number of companies listed at the individual stock exchanges and domestic market capitalization. In all respects, the most significant stock exchange in the region is the Frankfurt-based Deutsche Börse, which is the 12th largest stock exchange in the world on the basis of its market capitalization. In terms of market capitalization, the Budapest Stock Exchange, Prague Stock Exchange, Warsaw Stock Exchange and Wiener Börse lag far behind the German floor. There are considerable differences also in the number of companies listed at the stock exchanges. It is evident that the Deutsche Börse tops the ranking in this regard, as well, but the Warsaw Stock Exchange is also well ahead of the other exchanges. Since on the stock exchanges mostly domestically registered companies are traded, the performance of the stock exchanges unambiguously reflects the relative strengths of the national economies.

Table 6 Key figures for the stock exchanges of the Central European region in 2009

| | Stock exchange | Number of listed companies in 2009 | Domestic market capitalization in 2009 (million USD) |
|-----------|-------------------------|------------------------------------|------------------------------------------------------|
| Budapest | Budapest Stock Exchange | 46 | 30,037 |
| Frankfurt | Deutsche Börse | 783 | 1,292,355 |
| Prague | Prague Stock Exchange | 25 | 75,022 |
| Vienna | Wiener Börse | 115 | 114,076 |
| Warsaw | Warsaw Stock Exchange | 486 | 150,962 |

Source: World Federation of Exchanges, Annual report and statistics, 2009

It is important to note, however, that for the stock exchanges of the Visegrád Group it has taken a fairly short period of time to reach their current potentials. All these stock exchanges started as late as in the early 1990s, after the change of the political and economic regime, first the Budapest Stock Exchange in 1990. According to Sassen (2006), the fast economic uplift in the countries of the Visegrád Group was substantially driven by FDI (Foreign Direct Investments), while the contribution of domestic companies to the performance of the national economy remained rather small. Since domestic companies are listed at the stock exchanges in the region – as it has been mentioned above – it is not surprising that the value for domestic market capitalization is low. Among other things, it allowed the Wiener Börse following a policy of expansion in the region to acquire majority shares in the Hungarian and Czech stock exchanges against the Warsaw Stock Exchange in this latter case.

The rearrangement of the ownership structure of these stock exchanges suggests that Vienna and Warsaw are experiencing a strengthening role in the economic leadership of the Central European region, while the role of Budapest and Prague is diminishing. In comparison with the stock exchanges of the above-mentioned cities, the Deutsche Börse is a different class, with respect to the value of market capitalization and the number of the traded companies it is one of the major centers of global money markets.

CONCLUSION

In recent decades, one of the most popular research orientations of social scientific studies has focused on cities. These researches primarily concern two areas: on the one hand, researchers examine what positions the booming increasing megacities of the developing world take in global economy, and on the other hand it is still an important issue what hierarchy has evolved among the large cities of the developed world, and what the leading cities of the world are. The large majority of the cities of Central Europe are affected by these studies just marginally, as their population and economic potentials are not outstanding. Indeed, this view is also reflected in one of the most important works: the GaWC research embraces 122 cities, and designates the capitals of the Central European countries (with the exception of German cities) just as gamma world cities. Our analysis has examined Central European cities on the basis of three indices:

- the GDP in purchasing power standards and nominal GDP of the cities;
- the number and combined revenues of the large companies headquarters in these cities;

- the number of the companies listed at the regional stock exchanges and their domestic market capitalization.

It is not too surprising that the evaluation of the GDP data shows the dominance of the German cities and Vienna, while from the countries of the Visegrád Group is clearly Warsaw that has the largest GDP value. Nevertheless, GDP figures tend to indicate the role of the cities taken in economic leadership just to a lesser extent, and rather reflect more isolated conditions.

For this reason, it is important to examine the locations and the revenues of the largest companies. The obtained results suggest that in Central Europe it is evident that the German cities function as the centers of economic leadership, while the cities of the Visegrád Group – even Budapest featuring the largest combined turnover – belong only to the middle-ranking section in the hierarchy of the cities settled in the region. The analysis of the company data highlights an important special characteristic of the countries of the Visegrád Group: the largest number of headquarters and the largest volume of combined revenues are associated with Poland, because – in contrast with the Czech Republic and Hungary – beside the capital there are three additional cities with significant companies.

Finally, two characteristic parameters of the stock exchanges in the region have been examined: the total number of companies traded at the individual stock exchanges and domestic market capitalization. The Frankfurt-based Deutsche Börse dominates from the group of stock exchanges in Central Europe, and it is a leading actor of the global money markets. The leading stock exchange of the region is the Warsaw Stock Exchange, which the Wiener Börse intends to compete with by acquiring control over the stock exchanges of Budapest and Prague. On the other hand, the number of companies traded at the Warsaw Stock Exchange is larger than the combined number of companies listed at all the other stock exchanges of the region, while the strengthening of the Polish economy is expected to result in the increase of market capitalization.

Our fundamental conclusion is that in terms of economic leadership the dominant cities of the Central European region are the German cities and Vienna. From among the cities of the Visegrád Group, Budapest, Prague and Warsaw currently show similar performance, but Warsaw is foreseen to take the leading role.

REFERENCES

- Beaverstock, J.V., Taylor, P.J., Smith, R.G. (1999) A roster of world cities. *Cities*, 16(6), 445-458.
- Friedmann, J. (1995) Where we stand: a decade of world city research. In (eds. P. L. Knox, P. J. Taylor) *World cities in a world-system*, Cambridge University Press, Cambridge, 21-47.
- Geddes, P. (1915) *Cities in Evolution*. Benn, London
- Hall, P. (1966) *The World Cities*. Heinemann, London
- Heenan, D.A. (1977) Global cities of tomorrow. *Harvard Business Review*, 55(May/June), 79–92.
- Hymer, S. (1972) The multinational corporation and the law of uneven development. In (ed. J. Bhagwati) *Economics and World Order from the 1970s to the 1990s*, Collier-MacMillan, New York, pp 113–140
- Ivanička, K. Sr., Ivanička, K. Jr. (2007) Regional growth dynamics in Central and Eastern Europe in the socio-economic and geographic context of a post-socialist reality. In (ed. K. Stanilov) *The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism*, Springer, Dordrecht, 35-52

- Mulligan, G.F., Crampton, J.P. (2005) Population growth in the world's largest cities. *Cities*, 22(5), 365-380.
- Musil, R. (2009) Global capital control and city hierarchies: an attempt to reposition Vienna in a world city network. *Cities*, 26(5), 255-265.
- PwC – PricewaterhouseCoopers (2009) *UK Economic Outlook*, November 2009. http://www.pwc.com/im/en/assets/document/UK_Economic_Outlook_Nov_09.pdf (Last accessed: 23.03.2011)
- Sassen, S. (1991) *The Global City: New York, London, Tokyo*. Princeton University Press, Princeton.
- Sassen, S. (1995) On concentration and centrality in the global city. In (eds. P.L. Knox, P.J. Taylor) *World cities in a world-system*, Cambridge University Press, Cambridge, 63-78.
- Sassen, S. (2006) *Cities in a world economy* (Third edition). Pine Forge Press, Thousand Oaks
- Smith, D., Timberlake, M. (2002) Hierarchies of Dominance among World Cities: A Network Approach. In (ed. S. Sassen) *Global Networks, Linked Cities*, Routledge, New York-London, 117-144.
- Taylor, P.J., Walker, D.R.F., Catalno, G., Hoyler, M. (2002) Diversity and power in the world city network. *Cities*, 19(4), 231-241.
- Turok, I., Mykhnenko, V. (2007) The trajectories of European cities, 1960-2005. *Cities*, 24(3), 165-182.
- UN – United Nations (2008) *World Urbanization Prospects, The 2007 Revision*. United Nations, New York